Scientific American.

THE ADVOCATE OF INDUSTRY, AND JOURNAL OF SCIENTIFIC, MECHANICAL AND OTHER IMPROVEMENTS.

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THE
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☞See advertisement on last page.

Poetry.

THE TRUE ORNAMENT.

I ask not for the glittering wreath,
Of India's sparkling diamonds rare,
To deck my brow, while oft beneath,
There throbs a heart with heaviest care.

I ask not for the gilded chain,
Of perishing and worthless gold,
To clasp my neck, while oft in vain
The heart's best sympathies unfold.

Oh! give me not the worthless dust,
For which vain, anxious mortals toil,
To treasure up where moth and rust,
Doth soon corrupt the hoarded pile.

I covet not the gay attire,
In which vain beauty oft appears,
Oft that which wondering crowds admire,
Needeth far more their heartfelt tears.

But there's an ornament I crave ;—
To grant, vain world, it is not thine,
It floateth not o'er yon proud wave.
Nor yields it me earth's richest mine,

Oh, may it be a guileless heart!
In heaven's own sight of priceless worth!
Where nought corrupting ere hath part,
Pure, as the source which gave it birth.

A spirit meek and pure within ;
May this, alone, my life adorn,
Unsullied by the touch of sin,
Though subject to the proud world's scorn.

This ornament, O God of Love!
'Tis Thine, and Thine alone, to give ;
Oh, may I its rich beauties prove,
And in its full possession, *live !*

SIMPLE AFFINITY.

Some Water and Oil
One day had a boil,
As down in a glass they were dropping,
And would not unite
But continued to fight,
Without any prospect of stopping.

Some Pearlash o'erheard
And quick as a word,
He jumped in the midst of the clashing.
When all three agreed
And united with speed,
And SOAP was created for washing.

BRIGHTER DAYS.

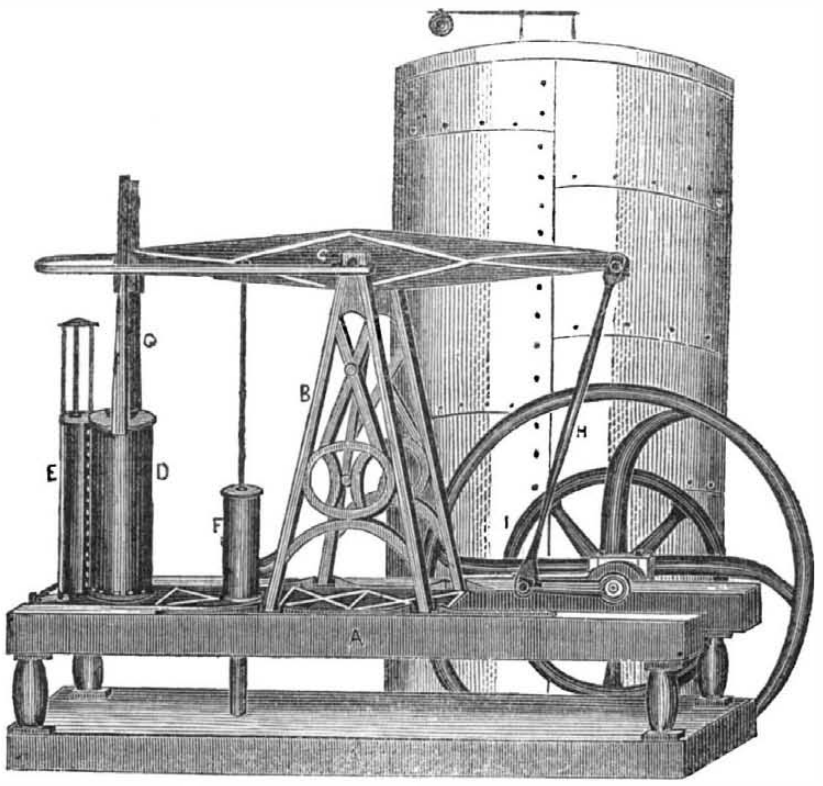
Let us hope for brighter days!
We have struggled long together,
Hoping that the summer rays
Might succeed the winter weather ;

Hoping till the summer came,
That to us seemed winter still,
Summer, winter, all the same
To our hearts so cold and chill.

Let us hope for brighter days!
Surely they must come at last,
As we see the solar rays,
When the storm has hurried past.

About 8,000 sheep have been slaughtered this fall at Cincinnati, for their tallow.

WALKING BEAM ENGINE.



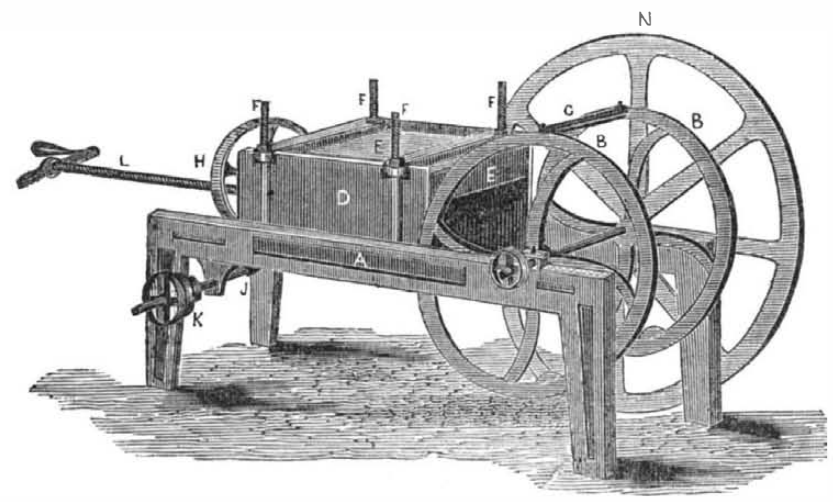
The above is a representation of a beautiful little one horse power steam engine which we have for sale, and the novelty of its construction, together with a desire to bring it to the notice of any one who may be in want of a cheap, substantial and convenient power for machinery, has induced us to illustrate it with an engravihg. In No. 7 of this vol. of the Scientific American we published an engravtng of a Horizontal Engine. The one we now present is what is called a Walking Beam Engine, and is a perfect miniature of the large engines now used in all the Hudson River steamboats.

A, is the frame, which is very neat ; B, are the walking beam standards ; C, is the walking beam ; D, is the cylinder ; E, the steam chest ; F, the pump ; G, the piston working in guides ; H, the connecting crank rod ; I, is a band wheel on the main shaft outside of the fly wheel.

The engine is complete in every respect, with fly wheel, band wheel, force pump pipe, &c. ; it is now in excellent running order, works beautifully and is so easily managed that any one however unaccustomed to steam power, can use it with the utmost ease It is accompanied by a strong and substantial boiler capable of sustaining a very heavy pressure.

There are many uses to which such an engine and boiler could be applied with great advantage. For grinding coffee, spices, paint, for driving lathes in a turning shop, for mortice and tenoning machines in a carpenter's, cabinet maker's or wheel wright's shop, for blower in a foundry, for the bellows in a blacksmith's shop, for driving light saws, for cutting wood for Locomotives and other purposes, in short for almost any business where a small mechanical power is desired they will be found exceedingly useful. The boiler will also answer as a stove for heating a shop, while it is equally as safe, the smoke pipe being turned into the chimney. Both engine and boiler are very compact, can be easily moved, and require no brickwork whatever. We will ship them with the pipes and every thing complete for running, for the low sum of $175. The purchaser on receiving them will only have to screw on two pipes and they will be ready for use. They can be sent with perfect safety to any part of the United States. Letters may be directed to Munn & Co., Scientific American Office, New York.

TOBACCO CUTTING MACHINE.



This is a superior constructed Tobacco Cutting Machine, the invention of A. P. Finch, Red Falls, Greene Co. N. Y., and is now for sale at Suydam, Reed & Co.'s, No. 108 West street, this city. Its workmanship is of a very superior kind, strong, correct and simple, and there can be no question of its qualities.

A, is the frame. B B, are two wheels on which is fixed the cutting knife C, across the box D. E, is the lid of the box, which is pressed down the tobacco to be cut by screws F F F F. As the tobacco to be cut has to be pressed down to a very solid bed, two cross bars extend under the nuts of the screw bolts across the box D, on the top of the cover E, and there are notches in the sides of the box to allow these bars to descend with the cover on the top of the tobacco as it is screwed down. H, is a cog wheel on the screw L. The screw passes through it and as there is a thread in the interior of the wheel, the screw will be moved forward or backward by the motion of the wheel. On the end of the screw in the box, there is a square block pressing behind the tobacco to move it gradually toward the knife. This is the office of the screw. Therefore as the knife cuts up the tobacco under E, at the right end of the box, the screw pushes up the compressed tobacco to present alternately a new layer of tobacco to the knife at every revolution of the revolving cutter wheels B B. N, is a fly wheel on the cutter shaft, and the pulley on the left of the cutter is for a band to drive the shaft. The cog wheel F, at the left end of the box, is driven by a worm wheel J, (scarcely seen) under the bottom of the box. K, is a set of pulleys on the shaft of J, to drive the said shaft, so that the screw may receive a forward or backward motion by the changing of the band. The handle on the end of the screw is merely to show the manner in which it may be turned.

The machine is to be seen at the store of the Company mentioned above, and those who are in need of such a machine will find this one to be both cheap and good.

RAIL ROAD NEWS.

New York and Erie Railroad.

The New York and Erie Railroad Company are said to have completed an arrangement for uniting their road, by way of Elmira and Seneca Lake, with the Central line of Railways between Albany and Buffalo. The Erie Railroad route will have the advantage of being eight hours shorter in time than the Albany route!

Old Colony Railroad.

The second track on the Old Colony Railroad to South Braintree, Mass. is nearly finished. It will add to the facilities of the Fall River line, which is already doing a large share of New York business. On this line a custom prevails which recommends itself to ladies travelling alone. The same conductor goes through from city to city.

Worcester and Nashua Railroad.

The Worcester and Nashua railroad has been completed to the crossing of the Fitchburgh road, 27 miles from Worcester ; thus bringing New York in direct connection with a large area of country which has formerly only been in railroad connection with Boston, and the trade of which has been monopolized by that city. New York will now share that trade, and the extension of this road to Nashua in December next will still farther increase the area of country brought into connection with this city. Passengers from all the country North, West or East of Nashua can then visit New York without passing through Boston.

Railroad Extravagance.

The London Times remarks, that a hundred million pounds sterling have been lost in England in the building of Railroads.—There has of course, been a serious check to that enterprise in that country. And probably the interests of this country would not suffer, if this branch of our enterprize were conducted with a little more moderation.

There is said to be a sweet potato in St. Louis four feet four inches long. That beats New Jersey. We should like to see that sweet potato very much. Seeing is believing.

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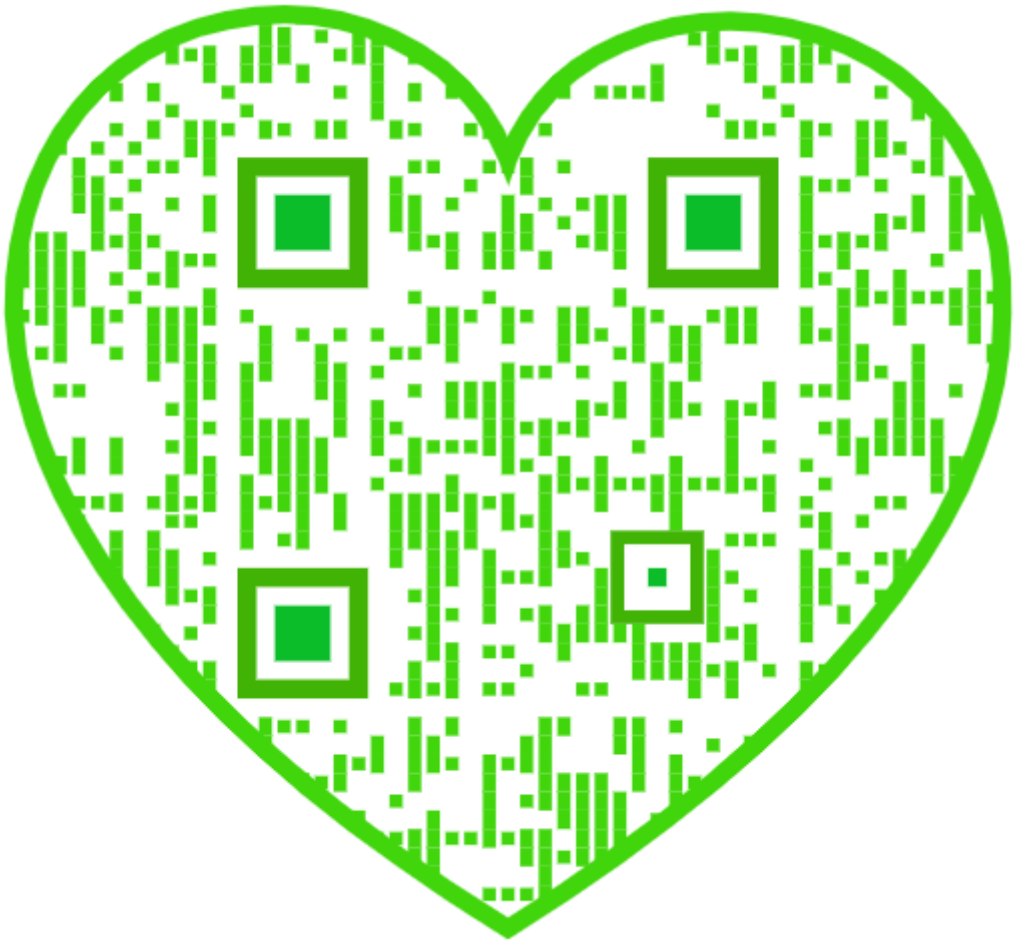

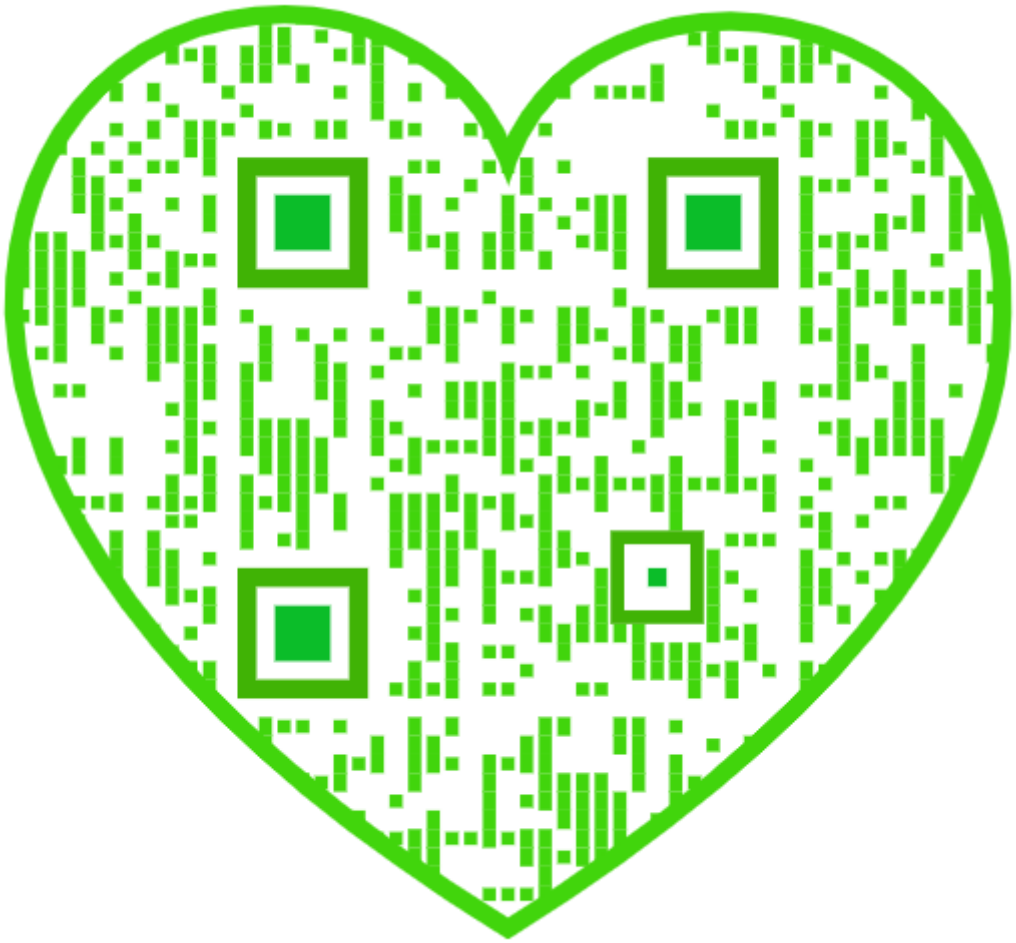

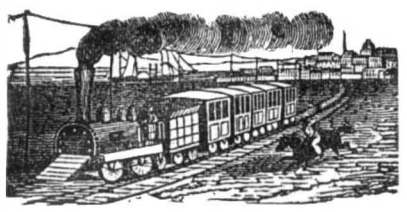

The Fair of the American Institute.

No. 6.

PREMIUMS AWARDED.

SILVER MEDALS.

Utica Globe Mills, Utica, N. Y. Lawrence, Trimble & Co. Agents, 35 Broad-st. for 2d best Black Broadcloth from American wool.

Seneca Woolen Mills, Seneca Falls, N. Y. Fisher, Howe & Hamilton. 21 Broad-st for 2d best Black Cassimeres made from American wool.

Platner & Smith, Lee, Mass. Lord & Snelling, Agents, 12 Exchange-place, for 2d best Fancy Cassimeres.

Gilbert & Stevens, Ware, Mass. Thomas & Dale, Agents, 53 Exchange-place, for White Flannels.

Conestoga Steam Mills, Lancaster, Pa. Lord Warren & Salter, agents, 41 Broad-st, for the best Brown Sheetings.

Portsmouth Manufacturing Co. Portsmouth, N. H. Stone, Swan & Co. Agents, 48 Exchange place, for Printed Lawns

New-York Mills, Whitestown, N. Y. Fisher, Howe & Hamilton, agents, 21 Broad st for Cottonades.

W. H. Plummer, Paterson, N. J. for Black and White Prints.

B. Marshall, Troy, N. Y for Superior Ginghams.

Lancaster Quilt Co. Lancaster, Mass., for Lancaster Quilts.

W. B. Leonard, New-Windsor, N. Y. for Satinet Warp.

H. H. Stevens & Co. Webster, Mass. for Linen Diaper and Crash.

Miss Mary Train, New-Lebanon, N. Y. for Home-made Diaper.

Phœnix Mills, Paterson, N. J. for best Hemp Duck.

Rockport Steam Mills, Rockport, Mass., for best Cotton Duck.

G. W. Billings, N. Y. for the best Hemp.

James Maull, Philadelphia, for Patent Seam Canvas for Sails.

John Frees, Marbletown, N. Y. for Ladies' Sole Leather.

E. Thorne, 18 Ferry-st for Hemlock-tanned Sole Leather.

George Kellogg, Winsted, Ct. best American Sheep and Lamb Skins.

Luman Foote, Canaan, Ct., for the best Basils and Skivers.

David Hubble, Glastenbury, Ct. for Hog Skins.

American Hemp and Flax Co for superior Flax.

H. P. Graves, 156 W. Seventeenth-st. for Goat and Kid Morocco.

Schoonover & Klein, Mystic, Ct. for Finished Calf-skins.

J. H. Grovesteen, 117 Grand-st, for 2d best Piano-Fortes.

J. W. S. Smith, 146 Wooster-st. for best Silver Plating.

John Locke, 47 Ann-st, for best Chamber Bath.

Stillwell & Montrofs, 112 Fulton, for best clothing.

J. D. Cromwell, 247 Grand-st for best Boys and Children's Clothing.

Benedict & Burnham, Waterbury, Conn. for Gilt Buttons.

T. Oliver, 157 Broadway, for a Tailor's Philosophical Transfer.

Eoff & Phyfe, 5 Dey-st. for a Silver Pitcher.

S. W. Shaw, Ga. best Oil Painting (Portrait from life of Gen. Taylor.)

J. A. McDougall, 251 Broadway, for best Miniatures.

J. Whitfield, 311½ Broadway, for best Cameo Cutting.

H. W. Herbert, Newark, N. J., for Pen and Ink Sketches.

S. Ellis, Broadway, for best Medallion Likenesses.

C. C. Wright, 80 Nassau-st., for a medal of the Art Union.

Speed of the Locomotive.

Twenty three years ago the utility and usefulness of this invention were doubted by the most practical and scientific men of the age. In 1814 the speed of George Stephenson's Kilinsworth Engine was 4 miles per hour. In 1825, only twenty-three years ago, Mr. Wood in his treatise on the railway system takes the standard speed at six miles per hour, drawing on a level a load of 40 tons. Within the last seven years the directors of the London and Birmingham Railroad in England, considered that the speed of twenty miles an hour was enough, and if they had been free from competition they no doubt would have adhered to that rate, from a conscientious conviction that a higher speed was incompatible with economy and safety. The vigor of the broad guage advocates, and the necessity of proving the capabilities of that system, have led to pushing the narrow guage lines which have been forced to follow. Thus, the enterprise of directors and the ingenuity of engineers have been kept on a stretch to carry on the rivalry.

The result has been that it has trebled the power of locomotives, and the speed of sixty miles per hour is common. In 1829 the highest speed attained was 29 miles per hour—working speed 10. In 1848 the highest speed attained is 75 miles—working speed 55. How striking the contrast. In 1829 the maximum load of the Locomotive Engine was nine tons—in 1848, less than 20 years, it is 1200; the highest speed then 15 miles, now 75, and in one instance 84 miles per hour.

American Lard.

The quantity of lard made in this country, makes one feel greasy justto think of it. In no part of the world is this business reduced to such perfection as at Cincinnati. As a sample of its magnitude, we would state that one house last year tried out thirty thousand hogs. To carry on this immense business, it has seven large circular tanks of sufficient capacity to hold fifteen thousand gallons each. These receive the entire carcase, with the exception of the hams, and the mass is subjected to steam process under a pressure of seven ty pounds to the square inch, the effect of which operation is to reduce the whole to one consistence, and every bone to powder. The fat is drawn off by cocks, and the residum, a mere earthy substance, as far as made use of, is taken away for manure. Besides the hogs which reach this factory in entire carcasses, the great mass of heads, ribs, back bones, tail pieces, feet, and other trimmings of the hogs, cut up at different pork houses, are subjected to the same process, in order to extract every particle of grease. This concern alone will turn out this season three million six thousand pounds of lard, five-sixths of which is No. 1. Nothing can surpass the purity and beauty of this lard, which is refined as well as made under steam processes. Six hundred hogs per day pass through these tanks one day with another.

Subterranean Lake Recovered.

On the Michigan Railway it became necessary to carry a grading or embankment of fifteen feet high across a low piece of ground, containing about 100 acres, nearly dry enough for plowland. When they had progressed with the grading for some distance, it became too heavy for the soil to support, the crust of the earth broke in, and the embankment sunk down into seventy nine feet of water! It appears that the piece of ground had been a lake, but had collected a soil of roots, peat, muck, &c., on its surface, apparently from ten to fifteen feet thick, which had become hardened and dry enough for farm purposes. Mr. Brooks thought it would have supported the road, and the fact might never have been discovered that it had rested on the bosom of a lake.

Cunard Steamers.

The new steamer Canada is advertised to leave Liverpool for New York, November 25th In the winter arrangement of the line we perceive the old vessels—the Caledonia, Acadia, Britania and Hibernia, are withdrawn. In December the semi-monthly arrangement commences with the departure of the Niagara for Boston on the 3d December, after which day a vessel will sail from Liverpool every second Saturday, alternately for New York and Boston.

Depression of Manufactures.

There are at the present time, says the Pawtucket, (R. I.) Gazette, "more spindles stopped, and more operatives out of employment, in our town, than we have known at any time since 1829. Our manufacturers have been disposed to keep their wheels moving as long as they could without heavy losses to themselves. As to profit, one of our citizens said to us a few days since—"The only account I have been able to keep without any degree of certainty, for some time past, is on the loss side of the book." The mills which have been stopped, are in most cases owned by men perfectly solvent, and who are now able to discharge any liabilities resting upon them, but who were perhaps doubtful as to their continuing able, if they continued to manufacture goods and sell them at ruinious prices, or lock them up in a store-house.—What the final result of this stagnation will be we are not able to predict."

When we take into consideration that the British Factories, have been almost on half time during the past year, and a number of our own factories not working full time, we may conclude that there are at present enough of factories to make enough of clothing in one year, to supply the world for two, for at present the markets are still glutted.

The Great Sea Serpent.

When the Dædelus frigate, Capt. M'Quæ, arrived at Portsmouth, England, was on her passage home between the Cape of Good Hope and St. Helena, her Captain and most of her officers and crew, at 3 o'clock one afternoon, saw a seaserpent. The creature was twenty minutes in sight of the frigate, and passed under her quarter. Its head appeared to be about four feet out of water, and there was about 60 feet of its body in a straight line on the surface. It is calculated that there must have been under water a length of 30 or 40 feet more. The diameter of the exposed part of the body was about 16 inches, and when it extended its jaws, which were full of large jagged teeth, they seemed sufficiently capacious to admit of a tall man standing upright between them.

Singular Freak of the Ocean.

Letters from Bonavista, (Newfoundland,) state that on the 24th Sept. the water in the harbor suddenly ebbed 10 or 12 feet, leaving the fishing boats high and dry in some places. In about ten minutes it ran in again, and rose much above the ordinary level. This phenomenon was repeated at short intervals nearly all the afternoon. It was also observed, in a less degree, at Halifax and other eastern ports. This sudden rising and falling of the ocean has sometimes taken place during the occurrence of disastrous earthquakes in distant countries, as in the great convulsion which destroyed Lisbon, in 1755. In the present instance, however, we have no intelligence of any such occurrence to account for the phenomenon.

Rich Mine.

We learn says the Corpus Christi Star, from one of the traders who recently arrived from beyond Laredo, that a mining company with a capital of $400,000, were making arrangements to work the mines between that place and Monclova, and that some of the machinery had already arrived. The mine is said to be a very rich one, and has not been worked since the expulsion of the Spaniards.—we presume owing to the proximity of the Indian ranges. For years many of the poorer people have washed out the metal in small parcels, and more than $100,000 thus procured has been brought to Corpus Christi, in exchange for goods. Now that the Indians will be kept in check by our soldiers, the company can pursue its labors uninterrupted.

Compliment to an American Artist.

Mr. John Banvard, with his panorama of the Mississippi and Missouri rivers, arrived at Liverpool in the steamship Europa on the 7th ultimo. We have seen a letter dated Liverpool, Oct. 12th, which says that the custom house authorities remitted the duties (£48) on his panorama—charging merely a nominal sum, one penny per roll. This act of the authorities was regarded in Liverpool as a high compliment to the artist and to the country which has produced the largest picture in the world.

Pictorial Directory of New York.

No. 2 of this unique work has just been published by Jones and Newman, Lithographers No. 128 Fulton st. N. Y. The object of this work is to exhibit in a continued series of colored engravings, all the dwellings, stores and public buildings fronting on the principal streets beginning with Broadway. On every page, there is a view of the buildings on both sides of the street, with the names &c. of the Hotels and stores. Price 25 cents.

Pictorial National Library.

We take pleasure in again calling the attention of our readers to this valuable Periodical. The November number is before us and fully sustains the reputation which the former numbers have given the work.—Published monthly at $2 per annum, by Simmons & Co. No. 12 School st Boston.

Boston Museum.

We never like to notice one paper at another's expense, but we must admit that the "Boston Museum" does excel all other literary papers with which we are acquainted It is printed weekly on beautiful fine paper and in a suitable form for binding. One years numbers will make a book of 416 pages and will contain as choice matter as can be found in any of our leading Magazines of the day. Putnam & Mellen Publishers, Boston, Mass.

"The Scientific American."

This excellent publication is progressing well into its Fourth Volume. As a weekly chronicler of the latest inventions of Genius and the triumphs of mechanic skill, the American is widely known, and is as extensively patronized as its merits well deserve. We hope its high character and its large and hearty support will be fully and undiminishedly continued. (Published in this city at 128 Fulton-st.)—*New York Tribune Nov.* 11, 1848.

Size of New York in 1698.

Some idea may be formed of "the Empire City" a century and a half ago from the following extract from the ordinances of the city fathers published "In Common Councle" Nov. 23d, 1698.

On the 20th of November the Board Resolved. "That four sober honest men, be appointed to keep a watch in this city every night until the 25th of March next, and that they hourly go through the several wards of the city during the said time to prevent irregularities."

Husk Beds.

An exchange says the husking season is the time to secure the best and most durable sort of under-beds. All the inner husks of the corn should be saved for this purpose. True it takes a great many to make a bed, but when once the sack is filled it is a bed for life, and is the lightest and softest thing of the kind that any one could desire. The husks curl up as they dry, and never mat down afterwards. Moreover, no insects ever lodge in them, as vermin do in straw. They are perfectly clean and being of strong and tough texture, they will not wear out for years.

Enormous Chain.

Probably the largest chain ever sent out of Storbridge, England, was manufactured by Messrs. Bailey, chain manufacturers, from whose warehouse it was removed on Tuesday week, to the wharf, consigned to a firm in Liverpool. It was a link chain, and intended for the use of an incline: its length was 2400 yards, or rather more than one and one-third of a mile, and its weight about 14 tons. It was removed to the wharf in a wagon drawn by eight horses.

A Distinction.

In a cigar shop in Parliament street, London, the following notice is posted: "Credit given to gentlemen, but cash expected from members of Parliament."

The coal mines in Illinois, opposite St. Louis have been purchased for $20,000, by a company of miners, who can hardly fail to make a large fortune out of the speculation.

The Mary Somerville arrived in the Thames from Calcutta, has brought 800 sacks of East Indian flour, rather a novel importation from that part of the world.

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An Old Patent and an Old Inventor.

The inventor who has received a patent subscribed with the handwriting of Washington, must feel proud indeed in the possession of such an instrument. Such a man is John J. Staples of the city of New York, who is the oldest living inventor holding a patent in the United States, and perhaps the oldest living patentee in the world. We publish the following patent from respect to the memory of the departed great, and the worth and genius of the honored living. Many of our readers will esteem this a great curiosity and valuable relic, and will desire to know something of the inventor himself, whose inventions are associated with the name of "the Father of his Country." Mr. Staples is now about 80 years of age and his head is whitened with the snows of many winters. His eye is still bright and his mental faculties clear. His step to be sure is less firm than of yore but his body is still erect and stately. Mr. Staples is an inventor who has had the honor of securing a patent from every President of the United States, except the lamented Harrison. He has a patent which we have seen, given under the handwriting of President Thomas Jefferson, for a Tidal Wheel to propel machinery, and the first invented in the United States.

This patent is for a Locomotive, but not a steam one, and in comparison with the mode in which specifications have now to be made out, it presents a very great contrast.

THE UNITED STATES OF AMERICA.

To all to whom these Letters Patent shall come

Whereas John J. Staples, Junior, a citizen of the State of New York, in the United States, has alleged that he has invented a new and useful improvement in the construction of a Carriage to be propelled by the mechanical Powers, which improvement has not been known or used before his application; has made oath that he does verily believe that he is the true inventor and discoverer of the said improvement; has paid into the Treasury of the United States the sum of thirty dollars, delivered a receipt for the same and presented a petition to the Secretary of State, signifying a desire of obtaining an exclusive property in the said improvement, and praying that a patent may be granted for that purpose: These are therefore to grant, according to law, to the said John J. Staples, Junior, his heirs, administrators or assigns, for the term of fourteen years, from the twenty second day of the present month of April, exclusive right and liberty of making, constructing, using, and vending to others to be used the said improvement, a description whereof is given in the words of the said John J. Staples, Junior himself, in the schedule hereunto annexed, and is made a part of these presents.

IN TESTIMONY WHEREOF, I have caused these Letters to be made Patent, and the Seal of the United States to be hereunto affixed. {L. S.}

Given under my hand, at the City of Philadelphia, this twenty-fifth day of April, in the Year of our Lord, one thousand seven hundred and ninety four, and of the Independence of the United States of America the eighteenth.

GO. WASHINGTON.

By the President, EDM. RANDOLPH.

City of Philadelphia, TO WIT:

I DO HEREBY CERTIFY: That the foregoing Letters Patent, were delivered to me on the 25th day of April, in the year of our Lord one thousand seven hundred and ninety four, to be examined; that I have examined the same and find them conformable to law. And I do hereby return the same to the Secretary of State within fifteen days from the date aforesaid, to wit: On the same 25th day of April in the year aforesaid. WM. BRADFORD.

The Schedule referred to in these Letters Patent, and making part of the same, containing a description in the words of the said John J. Staples, Junior, himself of an improvement in the construction of a Carriage to be propelled by the mechanical powers

General description of a travelling Carriage, which is to move without the power of Horses, carrying from 2 to 4 persons, requiring the labor of one of which to regulate its movement—will ascend any hill that is accessible to common carriages, moving with great rapidity, and is in every respect as manageable as those drawn by horses, its velocity being increased or lessened at pleasure by the application of the five following powers as occasion may require. The first power, which is the greatest, is the weight of the whole carriage with whatever is contained therein, which is raised up by the oval wheels in turning round, and when descending acts on the shortest lever. 2d Power is the weight of the top frame which supports the carriage body with its contents, which being likewise wound up by the said oval wheels at the same or a different time acts in descending on the two next size levers and is the next greatest power. 3d Power is the carriage body which being fixed on 4 friction rollers vibrates as a pendulum acting on the two longest levers. 4th. Is the weight of the person who regulates the motion acting likewise on the ends of the said 2 long levers and is the first motion the carriage receives. 5th. Is an occasional power which is gained when descending a hill by winding up two springs placed under the carriage which also acts with great force on the ends of the aforesaid two long levers when rising a hill.

JNO. J. STAPLES, JR.

Witnesses—SAM'L. FOLWELL,
GEO. TAYLOR.

SCIENTIFIC MEMORANDA.

India Rubber.

The India Rubber Factory at Harlem, this city, is making daily about 700 pounds of india rubber springs for railroad cars. In combination with the india rubber a portion of white or black lead is used which must make a superior composition, to what is called curing, alone. Vulcanized india rubber is simply sulphur combined with the india rubber at a great temperature. Sulphurous gasses we believe answers nearly the same purpose. Gutta percha is vulcanized by the same process.

Electric Light Again.

By late foreign papers we learn that experiments have been made in France for throwing an electric light upon the railroad in front of the cars. The experiments have been partially successful.

The Bosphorus.

From the late extensive observations of M. Hommaire de Heil, it appears that there is no appreciable difference of level between the Black Sea and the Sea of Marmora; and consequently there is no real current flowing out of the Black Sea through the Bosphorus. He attributes all apparent currents to the winds, which being mostly from the North, produces generally a flow from the South. This is compensated for by the strong currents flowing to the North during the Southerly winds.

A Reform in Locomotive Fuel Wanted.

It has been stated that the Reading Railroad Penn., during the year 1847 consumed by its locomotives 90,746 cords of wood. The consumption of wood on all our railroads is enormous and must soon thin our country, woody though it be, of its vast primeval forests. Hitherto, the motion, by shaking the coals into a solid mass, has prevented the use of coal.

Why do they not use coke made of bituminous coal? No wood is used on the English Railways.

Emery in Asia Minor.

M. Tchihatcheff, in his recent explorations in Asia Minor, says Silliman's Journal, has brought to light extensive beds of Emery in the Western portions of this country, particularly between the ruins of Stratonicea in Caria and Smyrna. This substance is indispensible in polishing minerals and all hard stones, as well as for the lapidary's use generally, and by these new discoveries, it is evident the necessary supply will suffer no diminution.

Height of the Atmosphere.

Sir John W. Lubbock, according to the hypothesis, adopted by him in his Treatise on Heat of Vapors, shows the density and temperature for a given height above the earth's surface. According to the hypothesis, at a height of fifteen miles the temperature is 240° Far. below zero; the density is .03573; and the atmosphere ceases altogether at a height of 22.35 miles. M. Biot has verified a calculation of Lambert, who found, from the phenomena of twilight, the altitude of the atmosphere to be about eighteen miles. The condition of the higher regions of the atmosphere, according to the hypothesis adopted by Ivory, is very different, and extends to a much greater height.

The Sufferings, Perseverance, and Triumph of Genius.

There is at present in England an American who went to that country to endeavor to interest the capitalists in a new bridge which he has constructed. His name is Remington, a native of Virginia. An account of his progress is given by himself in a letter to Dixon H. Lewis, and published in Hunt's Merchant's Magazine. When he arrived in England in January 1847, he was without money, and spent the first five months vainly looking for somebody with enterprise enough to encourage his plan, living all the time on less than three pence per day. He slept upon straw, for which he paid a half penny per night. His limbs became distorted with rheumatism, and he was literally covered with rags and vermin, consorting as he had to do, with the lowest beggars in London. Still he did not despair. His sufferings were so great that his head turned grey. He had to pay to usurers £10 for admittance to the Royal Zoological Gardens, where he succeeded, after much mortification in getting a model made of the bridge. The model although a bad one astonished every body. Every engineer of celebrity in London was called in to decide whether it was practicable to throw it across the lake. Four or five of them at the final decision declared that the model before them was passing strange, but that it could not be carried to a much greater length than the length of the model. This was the point of life or death with the inventor. He says;—

"I was standing amidst men of the supposed greatest talent as civil engineers that the world could produce, and the point decided against me. This one time alone were my whole energies ever aroused. I never talked before—I was haggard and faint for want of food—my spirit sunk in sorrow in view of my mournful prospects—clothes I had none—yet, standing over this model did I battle with those men. Every word I uttered came from my inmost soul and was big with truth—every argument carried conviction. The effect on these men was like magic—indeed, they must have been devils not to have believed under the circumstances. I succeeded. My agreement with the proprietor was that I should superintend the construction of the bridge without any pay whatever, but during the time of the building I might sleep in the Gardens, and if the bridge should succeed, it should be called 'Remington's Bridge.' I lodged in an old lion's cage not strong enough for a lion, but by putting some straw on the floor, held me very well, and indeed was a greater luxury than I had for many months. The carpenters that worked on the bridge sometimes gave me part of their dinner. On this I lived and was comparatively happy. It was a little novel however, to see a man in rags directing gentlemanly looking head carpenters. The bridge triumphed, and it cost £8, and was the greatest hit ever made in London. The money made by it was astonishingly great, thousands and tens of thousands crossing it paying toll, besides being the great attraction to the Gardens. Not a publication in London but what has written largely upon it, although I have never received a penny nor ever will for building the bridge.

The success of his invention gave him, however, celebrity, and he says it also gave him credit with a tailor.

I got a suit of clothes and some shirts—a clean shirt. Any shirt was great, but a clean shirt—O God, what a luxury! Thousands of cards were left for me at the Gardens, and men came to the bridge from all parts of the kingdom. I first built the mill, which is the most popular patent ever taken in England. The coffee pot and many other small patents take exceedingly well. The drainage of Tixall Meadows is the greatest triumph I have yet had in England. The carriage bridge for Earl Talbot is a most majestic and wonderfully beautiful thing. Dukes, marquisses, earls, lords, &c., and their ladies are coming to see it from all parts. I have now more orders for bridges from the aristocracy than I can execute in ten years, if I would do them. Indeed, I have been so much among the aristocracy of late that what with high living, being so sudden a transition from starving, I have been compelled to go through a course of medicine and am just now convalescent. Of course anything once built precludes the possibility of taking a patent in England, but its merits and value are beyond all calculation. A permanent, beautiful and steady bridge may be thrown across a river half a mile wide out of the reach of floods, and without anything touching the water, at a most inconsiderable expense. The American patent is well secured at home I know. I shall continue to build a few more bridges of larger and larger spans and one of them a railroad bridge, in order that I may perfect myself in them so as to commence fair when I reach America. I have a great many more accounts of my exploits since I came to Stafford, but must defer sending them until next time. I beg you will write me, for now, since a correspondence is opened, I shall be able to tell you something about England. I know it well. I have dined with earls, and from that down—down—down to where the knives, forks and plates are chained to the table for fear they should be stolen."

Jeffery the able Editor of the Edinburg Review once said. Offer a prize of a thousand pounds for the best Essay on Greek and ten chances to one if a yankee dont win it, and some fellow who could not read a word of it before he saw the offer of the prize. The case of Mr. Remington exhibits a heroism of a far more elevated and ennobling character than the triumph of valor on the battle field.

Respect for Art.

A nobleman having called on Holbein while he was engaged in drawing a figure from life, was told that he could not see him but must call another day. Foolishly taking this answer as an affront, he very rudely rushed up stairs to the painter's studio. Hearing a noise Holbein opened his door; feeling enraged at his lordship's assumption and intrusion he pushed him backwards from the top of the stairs to the bottom. However, reflecting immediately on what he had done he repaired to the king. The nobleman, who pretended to be very much hurt, was there soon after him and having stated his complaint, would be satisfied with nothing less than the artist's life: upon which the king firmly replied—'My lord, you have not now to do with Holbein, but with me; whatever punishment you may contrive by way of revenge against him shall assuredly be inflicted upon yourself.—Remember, pray, my lord, that I can, whenever I please, make seven lords of seven ploughmen, but I cannot make one Holbein of even seven lords.'

The African Rhinoceros.

The Black Rhinoceros, whose domains we seem now to have invaded, resembles in general appearance an immense hog; 12½ feet long, 6½ feet high, girth eight feet and a half, and of the weight of half a dozen bullocks; its body smooth, and there is no hair seen except at the tips of the ears and the extremity of the tail. The horns of concreted hair, the foremost curved like a sabre, and the second resembling a flattened cone, stand on the nose and above the eyes; in the young animals the foremost horn is the longest, whilst in the old ones they are of an equal length, namely, a foot and a half or more; though the older the rhinoceros the shorter are its horns, as they wear them by sharpening them against the trees, and by rooting up the ground with them when in a passion.

When the rhinoceros is quietly pursuing his way in glades of Mimosa bushes, (which his hooked upper lip enables him readily to seize, and his powerful grinders to masticate,) his horns, fixed loosely in his skin make a clapping noise by striking one against the other, but on the approach of danger, if his quick ear or keen scent make him aware of the vicinity of a hunter, the head is quickly raised, and the horns stand stiff and ready for combat on his terrible front. The rhinoceros is often accompanied by a sentinel to give him warning, a beautiful green backed, and blue winged bird, about the size of a jay, which sits on one of its horns.

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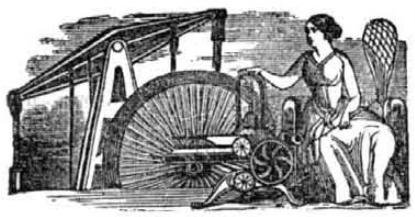


New Inventions.

To Prevent Railway Collisions.

A new kind of brake has been exhibiting lately before the London Poly technic Institute which has been very favorably noticed by the Mining Journal and which is so very like one invented last year by a mechanic in this State, (and might have been successful) that we consider it of some interest to give a description of it.

It was proved by experiment years ago that a train moving at a velocity of twenty miles per hour might be stopped in a space of 20 feet, so said Sir Geo. Cayley, but for all this it has never practically been performed. As the majority of collisions take place from the inability of engineers to stop the train in a given time and space, it would tend to make railway travelling more safe were a perfect and immediately effective brake invented. The model exhibited as mentioned above, invented and patented by a Mr. Bishop, seems to be one grand move to accomplish this object. Perhaps, the following brief explanation will give some idea of the advantages of the contrivance:—"Let it be understood, in the first case, that every carriage has the brakes attached to it; and that, by means of a bar, placed under the carriages, the brakes may be thrown in or out of action at pleasure; and that, when the train is made up, these bars could be connected from carriage to carriage —so that the engineer, by acting upon this bar at one end of the train, has the power of applying the brakes to every carriage simultaneously, converting, as it were, the whole train into a sledge. Let it also he understood, that the conductor has the same power over these brakes as the engineer, rendering the one independant of the other; but what is still more important it gives the conductor as well as the engineer, full and efficient power to check the velocity of the train, or to stop it altogether—for it can be shown that the brakes being applied to every wheel, in a train, the power of any locomotive engine would not be sufficient to move it forward; and that, when the train has been shut off, and the brakes applied, the train may be stopped withthin an incredible short space. All these matters were fully demonstrated by the models exhibited."

Daniel's Patent Planing Machine.

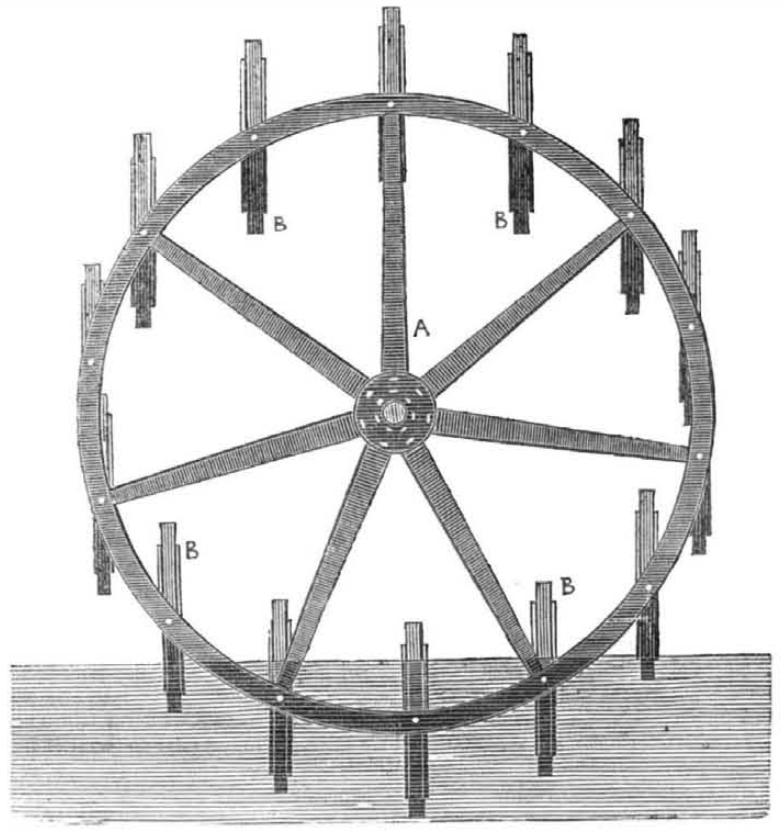
We are confident that it is not generally known among our mechanics who are engaged in the various branches of wood work, that good planing Machines can be had for a very small sum, which would be a great saving to them both in time and money. There have been so many law suits and difficulties about machines for planing wood, that there seems to be a general fear of using them, though evidently at a great sacrifice of interest. There is one Patent for a planing machine, however, which we know to be free from all these troubles. We allude to Daniel's invention, and we would recommend its general use throughout the country, for it is one of the greatest labor saving inventions in existence. We are the more certain that our remarks in this particular are correct because we have one of these machines in our possession for sale, and have tested it by the most thorough trial and a minute examination of its parts. The machine we have for sale is a noble one and will last many years. Attached to a saw mill, or in a carpenter's shop, a lumber yard or wherever planing is required it can be used, to great advantage. We will dispose of it for $250, its cost being so small that if it only saved the labor of one man it would pay for itself in less than a year, but itperforms a day's labor of one man in 20 minutes! For dimensions see advertising page.

New Crane at Baltimore.

Messrs. Hopper and Cheesborough, of Baltimore, have just completed a large Crane made for their wharf in the city of Baltimore which is made after the patent of J. P. Bishop, of this city. It is the largest and most powerful crane perhaps in the world. It stands eighty-six feet in height from the water, and the arms sweep a base of one hundred and twenty feet. The main "fall" or rope, for a single purchase, measures twelve inches in circumference. Independent of that, there is another "fall," nine and a half inches in circumference, to be used for what is termed the long purchase. The crane is capable of lifting with facility sixty or seventy tons weight, and all is done by the agency of one horse, with the aid of the complication of mechanical powers in the machine. It is designed for lifting heavy weights, such as boilers out of steamboats, steamboat shafting, masts out of vessels, heavy timber &c. &c.

NEW STEAMBOAT PADDLES.

Figure 1.



This is a representation of a novel paddle wheel forwarded to us by the inventors, Messrs Ripley & Neale, Lynn, Mass., to whom all communications, for further information may be directed.

The object of the invention is to make the paddle enter and leave the water vertically instead of entering the water obliquely and leaving it at such an angle as to lift a great weight of water, as is now the case with all the paddles in use, which can readily be observed by any person who looks upon a steam boat in motion where behind the paddle is seen only a thick cloud of broken water frequently thrown upwards far above the middle of the wheel.

Fig. 2.

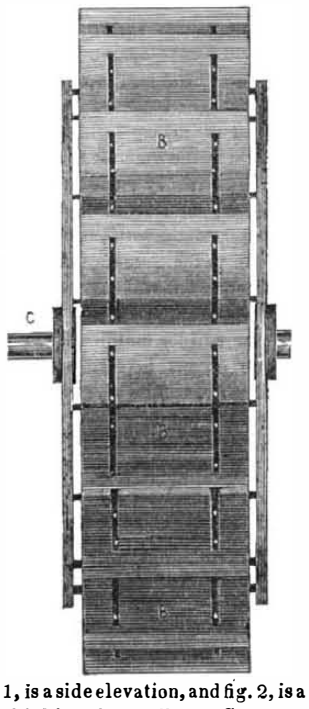


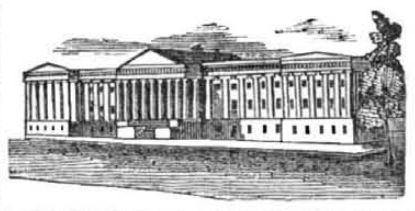
Fig. 1, is a side elevation, and fig. 2, is a front view exhibiting the paddles. Corresponding letters represent like parts in both figures. A, is the wheel, B represents the paddles, and C, fig. 2, is the shaft. The nature of this invention consists in making the paddles self acting—using no cog wheels, cranks or extra shafts for that purpose. Each paddle is constructed with an axis in the middle, which passes through both sides of the wheel at the circumference and divides the paddle into two parts, the upper part being made lighter than the lower. The upper part is therefore constructed of wood and the lower of iron, and coupled or fastened together by transverse bars, as seen in the figures. It is plain that if these paddles are hung in the periphery of the wheel so as to move on their respective axis, by the gravity of the lower part of the paddles, they will maintain a vertical position when they enter the water, when they are in the water and when they leave the water. There have been many objections urged against vertical paddles and practically speaking, none of our steam boats use them. We are not aware of any paddle wheels, (the same in all respects as represented in these engravings), having ever been used. The inventors consider that there can be no practical objection urged against either the simplicity or correctness of the principle of their invention.

Although great improvements have been made within the past ten years to increase (and successfully too) the speed of steamboats, still there is room for improvement, therefore every invention to improve the speed of steam boats should be carefully tested, before it is condemned. We must not be content with the speed of our steamboats, till they accomplish thirty miles per hour.

Screw Cutting.

The Rochester Democrat says that Mr. Arnold has for exhibition in that city a machine recently invented for cutting screws. By a simple process costing but a child's strength a bolt is formed into a perfect screw. The blocks into which the dies are inserted, are operated by means of a screw worked from right to left so that it is impossible for them to be thrown out of their proper centre. This self-centreing process is described as one of the chief improvements in the machine. Mechanics who have seen it concur in saying that it is greatly superior to those now in use, doing work at infinitely less expense and trouble. These machines are afforded at from $20 to $50 for the various sizes, while the cost of those generally in use is about $100.

The water rates proposed for Boston, are much lower than those which are adopted in New York.



LIST OF PATENTS

ISSUED FROM THE UNITED STATES PATENT OFFICE,

For the week ending Nov. 7, 1848.

To Cadet Crousillac, of New Orleans, La., for improvement in machinery for raising, sawing and splitting wood. Patented Nov. 7, 1848.

To W. Z. W. Chapman and J. W. Chapman, of Philadelphia, Pa., for Universal Instrument Sharpener. Patented Nov. 7, 1848.

To Lewis J. Cohen, of New York City, for improvement in composition of Slate Pencils. Patented Nov. 7, 1848.

To H. H. Day, joint inventor with and assignee of F. D. Haywood, of New Brunswick, N. J, for improvements in Suspenders and Shoulder Braces. Patented Nov. 7, 1848.

To George Pratt, of Boston, Mass., for improvement in Extension Tables. Patented Nov. 7, 1848.

To J. & E. Baldwin, assignee of Cyrus Baldwin, Goffstown, N. H., for improvement in Machine for cutting and stamping Crackers. Patented Nov. 7, 1848.

To B. Bowman and A. Kauffman, of Oristown, Pa., for improvement in filling barrels with Flour. Patented Nov. 7, 1848.

To Richard Solis, of New York City, for improvement in the manufacture of Elastic Cloth. Patented Nov. 7, 1848.

To Haywood Cox, of Peach Bottom, Va., for improvement in Side Hill Ploughs. Patented Nov. 7, 1848.

To Nathaniel C. Sandford, of Meriden, Ct., for combined convex and concave Augur. Patented Nov. 7, 1848.

To George Seibert, of Hagerstown, Md. for improved Duck's Foot Propeller. Patented Nov. 7, 1848.

To R Carleton Overton, of New York City, for improvement in tubes for raising Lamp Wicks. Patented Nov. 7, 1848.

To George Bartlett, of Smithfield, R. I., for improvement in Hinged Ploughs. Patented Nov. 7, 1848.

INVENTOR'S CLAIMS.

Printing Presses.

Jos. M. Marsh, New York City, for improvement in printing presses. Patented Oct. 3, 1848. I claim the method of obtaining a reciprocating motion from a continuous rotary motion by combining with a cogged rack two cogged wheels composed each of the segments of different diameters. I also claim the method of sustaining the bed of the press as it reciprocates against the pressure of the cylinder by combining with the bed one or more ways. I also claim the method of elevation and depressing the inking rollers. And, finally, I claim operating the finger bar by means of spring-jointed arms at the end thereof.

Sheet Lead.

John Robertson, Brooklyn, N. Y., for improved method of manufacturing sheet lead. Patented Oct. 3, 1848. I claim as my invention the mode of manufacturing such hollow cylindrical forms of lead and other soft metals and compounds into sheets by first placing them around a roller whose axis may be in a horizontal plane or in one of any inclination and then rolling it. I claim the construction of the carrying roller, and the manufacturing therewith of hollow cylindrical formed pieces of lead or other soft metal or compounds into sheets by rolling, combined with the moveable bearings.

Harness Saddles.

A. D. Brown, New York, City, for improvement in harness saddles. Patented Oct. 3, 1848. 1st. The peculiar form of the sheet metal housing plate, caused by the addition of the lower flanches or ledges. 2nd, I also claim the securing the pieces of leather forming the under side of the pads, with the housing plate forming the upper side of the same by means of the fastening plates with notched or plain edges.

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NEW YORK, NOVEMBER 18, 1848.

Progress of Science.

When we look back upon the dark days of science—the time when the false philosophy of Greece reigned supreme in college and cloister—when truth was trampled beneath the iron footsteps of spiritual tyranny and pride, and compare the state in which the civilized world was then, with its present state, we will be struck with astonishment by the contrast. Then—and it is not long since—the art of printing was unknown. Then both nobles and people of universal Europe, with but a few exceptions, could neither read nor write. "Darkness covered the land, and gross darkness the people." And when Gallileo arose to unseal the book of philosophical truth, alas, he had at the fire and altar—to sacrifice the princely price of his conscience to ignorance and bigotry. Then chemistry was confined to a few tricks of legerdemain, and the science of practical mechanics—in comparison to what it now is—was as the rude image of the South Sea Islander, to the finest group that ever came forth from the inspired chisel of Canova. Then the power of every monarch in Europe was a unit—now it is, in the majority of cases, merely nominal. Then a Henry, and a Louis had but to say, "rebellious subject thy head shall roll from the scaffold," and it was done. But now the scene has changed, the once serfs of Europe have become men, and kings have been made to experience the trite saying of Boswell's father to Dr. Johnson in reference to the fate of Charles I., "he was taught that the neck of a king had a joint, as well as that of a subject."

"To what," it may be asked, "are we to ascribe the great changes which have been made in the social condition of Christendom, during the last two hundred years?" One thing we know, under the feudal system the Baron covered himself in his coat of mail and with his iron cased lictors ruled his peasantry as lord supreme. What was it which broke that feudal power? Allison says, "it was the discovery of gunpowder." On the field of Marston, the heart of the mail clad cavalier—invincible before to the shaft or the spear of the peasant, was pierced by the ball of the marksman, and the monarch made to feel the might that slumbered in a peasant's arm"—War we deprecate in almost every sense of the term, but there is much truth in the assertion of the great historian.

We may justly attribute the great social advancement made in the world since the art of printing was discovered, to the art of printing itself. An educated people may be led by reason, not driven by brute force, and as the art of printing has advanced and knowledge been disseminated among the masses, so in proportion, have freedom and correct ideas of justice been restored to their birthright in the human mind.

Mechanical Books.

We have now made such arrangements as will hereafter enable us to supply our friends and subscribers with any books of the Mechanical and Scientific kind which they may desire, and we trust they will not be backward in making their wants known. In another part of our paper will be found the commencement of a catalogue of works which we can furnish, with the prices also given. It has required much time, labor and expense to make up this catalogue because the works embraced in it are most of them rare and of a peculiar character. We trust that our exertions will be appreciated.

Machinery for Sale.

There is a good chance now for the purchase of a splendid wood Planing Machine, a Portable Saw Mill and other machinery, at prices far below their cost. Any one who can command a trifling capital can easily double the amount by embracing this opportunity. See advertising page.

Cholera.

At this momentous crisis, when both the public and professional minds are so wholly engrossed with the anticipated ravages of so terrible a scourge to the human race, as Cholera—should it reach our shores—and especially when multitudes of opinions are being expressed in almost every possible form of publication, we feel it incumbent on us to take a brief survey of the malady.

Various theoretical and hypothetical disquisitions have been entered into by eminent physicians, attempting to explain the phenomena, nature, cause, prevention and treatment of Cholera; but without any practical utility: some ascribing its pestilential approach to a fungous origin—others its connection with impurity—some attributing it to its epidemic character—others to a volcaic origin, and so on. Differing as doctors generally do, it is, nevertheless, curious, however, to observe how often in the treatment of Cholera, where the views entertained of the nature, origin and mode of propagation of the malady are at variance, that the plans of treatment recommended are nearly identical: some advocating "Venesection"—others preferring as curative measures stimulating emetics—artificial heat, calomel with opium and the "saline treatment."

Again, hydropathy and homœpathy have not been without their advocates: cold strong coffee and cold water with cold decoctions of Peruvian bark are recommended. The preventitives to Cholera, according to homœpathists, are a globule or drop of camphorated spirit, *or a plate of bright copper next the skin!* But doctors likewise differ among homœpathists as well as allopathists.

There is no SPECIFIC for Cholera, wherewith, on all occasions, to avert its fatal progress, any more than for another disease.—Such pretensions may be safely left to empirics and to charlatans. On the other hand the differences of opinion and the proposed remedies prove highly beneficial; for it provokes discussion and eliminates *truth*. It is by a difference of opinion alone that we can arrive at just and correct conclusions. All experience attests that Cholera must be combatted according to the symptoms which present themselves. The results arrived at by the consideration of the greatest number of opinions is that the preliminary diarrhœa is best to be treated by astringents. The professional man may choose, according to the age and temperament of his patient and the severity of the symptoms between the simple chalk mixture and added astringents—no doubt a multiplicity of agents of the same class are advantageous. However it is one of the most positive results of multiplied experience that the use of much opium retards, if it does not impede recovery in the after stages—and in cases where conium and hyoscyamus with mercurial preparations are employed, it is evidently the safest as it fulfils two indications—to allay diarrhœa and restore the functions of the liver.

Where the malady begins with vomiting or with purging combined the best treatment, should the constitution admit it, would be emetics of salt and water or of mustard to give tonicity to the stomach, which may be followed up by the administration of quinine in combination with iron, and alkaline effervescing draughts. Should such treatment combined with mustard poultices fail to combat the severity of the attack; then carbonate of ammonia—camphor with brandy and water and calomel and opium or calomel in large doses may be had recourse to. Strong stimulants internally and externally are likewise beneficial—such as naptha, assafœtida, &c.—If calomel fail in its action, Croton oil must be tried.

Plans of treatment, as above enumerated, varied according to symptoms and the slight differences of formula, favored by individual practitioners, appear to meet at once the various opinions entertained as to the nature and origin of the malady and the slight differences of treatment pursued by the profession.

A few words as regards preventitive measures from the increments of Cholera The City of New York from its position being so adjacent to the sea—surrounded by water and built comparatively on high ground ought to escape from the ravages of Cholera. This can only be done by adopting such measures as shall be best fit to ameliorate the FILTHY condition of the city. Let a competent Medical Committee be appointed. The Corporation need the utmost vigilance! Clean streets—thorough ventillation—cleanliness of person and temperance of diet, we feel assured will secure our citizens from the blasting influence of Cholera.

Iron Carriages.

The tendency of the last few years to substitute iron for wood has been shown in ships, ploughs, and other machines. It has even been attempted in houses; but here, we believe, without that success, which is shown in extensive use or practice. "A gentleman of the north of Scotland," says Chambers Edinburg Journal, "is now experimenting, with good ground of hope, on the introduction of iron carriages. He proposes that the bodies of such vehicles should be formed entirely of iron frame, the panels of plates of galvanized iron, and the axles of iron tubes filled with wood; the wheels to have for spokes double rods pyramidally arranged, or on what is called the suspension principle. The advantages proposed are—first, a lightness as about two to three; second, a saving of cost in about the same proportion. Thus, a pony-carriage, which, of the usual materials, would weigh five hundred weight, is only about three when constructed of iron; an omnibus, which, of the ordinary construction, would be twenty to twenty-four hundred weight, can be formed of iron at about eleven. The same in respect of external decorations and internal comfort. A carriage of this kind effects an important saving in the motive power. If successful as an invention, it must be of no small importance to humanity, both in sparing the muscles of individual horses, and allowing of a greater share of the fruits of the earth going to the use of human beings. For use in tropical countries, there is a farther advantage in the non-liability to cracking and shrinking, and the unsuitableness of an iron frame for becoming a nest of noxious insects. Apart from the mere substitution of one material for another, which is the leading feature of the invention, much is claimed for it on the ground of the superior springs employed in these carriages. They are spiral, and vertically arranged, working in a case, with an apparatus which precludes their falling from their perpendicular."

Suspension carriage wheels have been long in use in America, and within a short period a valuable improvement has been made on hollow carriage axles and the manner in which the wheels are connected to the same, by W. L. Lewis of Clarendon, Orleans County, N. Y. and for which he has made application for letters patent.—ED.

Inventors and Fairs.

Many inventors who had articles exhibited at the Fair of the American Institute, that were original and new, have felt disappointed to see prizes awarded for old and well known articles, while the new articles were passed over in silence. New inventions certainly present prior claims to all others and we know that no attention has been paid to new inventions, any more than old ones. There certainly should be a distinction. The Franklin Institute has been somewhat blamed also, but we cannot speak confidently on this point. On the catalogue of prizes, No. 1 class should always be for new inventions.

The Robbery at Washington—$1500 Reward.

An advertisement will be found in another column, from the Commissioner of Patents, offering a reward of fifteen hundred dollars for the recovery of the property stolen, and the detection of the robbers who broke into the United States Patent Office, at Washington, on Wednesday night last week.

Isham's Patent Sand Paper.

We believe that the Sand Paper made by R. H. & J. G. Isham of this city is found to be much superior to any in use. It is made in a peculiar manner, for which they have obtained a Patent, and is sold as cheap as the cheapest. They have a large manufactory at 71 Fulton st. New York.

War against Labor Saving Machinery.

To shake off the yoke of the oppressor, we behold the Germans of Europe grasping the musket and bayonet, and shouting aloud for *Liberty and Faderland.*

In the midst of sanguinary struggles—struggles against home oppression, very different scenes are enacted, in comparison with battling against a foreign foe, and like the bigotry which the Christians displayed in destroying pagan temples, and the Reformers in destroying the ancient cathedrals, so are an excited people always apt to vent their vengeance blindly. By late accounts from Europe, we learn that the populace in Berlin—enlightened and educated Berlin, have displayed the most remarkable hostility against a machine having been employed to do some work there and a number of laborers having been dismissed who were previously engaged at work—when crowds of them proceeded to destroy the machine and demand employment. Two battalions of the Burgher Guard, which had been ordered out, could not restore order, but were compelled to use firearms on their being attacked by the laborers. Towards afternoon the whole city was thrown into alarm, and the affray had become a regular fight between the laborers and the Burgher Guards. The latter were using their arms freely, and when they had finally succeeded in suppressing the row, five laborers had been killed, and many wounded. In the evening the fighting between the workmen and the Burgher Guards recommenced. Barricades had been constructed in the streets near the Copnickerfield, and attempts were made by the Burgher Guards to take them by storm, which at last they accomplished, but not without a fierce and sanguinary struggle.

We point to this event as a dark spot in the history of modern improvements, and as we are the advocate of improvements in the useful arts, and of honest industry also, we instance this circumstance as a beacon to warn and exhort both people and men of capital in our own land. The causes of revolt among the intelligent people of Berlin by the introduction of new labor saving machinery must have been great indeed. To the credit of America be it spoken, our people have encouraged, never destroyed machinery to lessen labor, but then our people know not (may they never know it) the depth of that misery in the European working classes of—

"Begging a brother of the earth,
To give them leave to toil."

The Law of Libel.

A very important decision for printers has been made by the tribunal at Senlis, France. A certain Mr. Zellanger wishing to have a letter, written by him to the Minister of War, put into print, was refused by sundry printers in Paris, Rouen and Senlis, on the ground that the letter contained some strong language which might compromise them; Mr. Zellanger appealed to the court at Senlis, which decided that if the author chooses to assume the responsibility expressly, the printers can in no-wise become answerable for the expressions of the former.

Counting Room Almanac.

Messrs. Oliver & Brother have favored us with a beautiful Counting Room Almanac for 1849, and request us to inform our subscribers that they are for gratuitous circulation in this city, Brooklyn and Jersey City, and may be had free of expense by applying at their office corner of Nassau and Fulton sts.

The article on the Telegraph is deferred to next week—when we shall publish a cut of the first Alphabetic Printing Telegraph.

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Planing Machines.

(Concluded from our last.)

Formation of saws and other cutters, to work with a rotative motion. The most obvious mode is, the making the cutter of one piece, consisting of steel, or iron with steel welded on to it, as far as is necessary for strength and sharpness. In some instances, however, there may be an advantage in making it in pieces, for instance, in annular segments, fastened to an included cylinder: the larger it is, the greater will be the advantage in thus composing it; and, if a part only is worn out, or damaged, that part may be replaced, without injury to the rest. Another mode of composition is, to make the teeth distinct from each other, as well as from the cylinder from which they are to project: they will thus be separately bedded in the cylinder, taking on and off, as occasion may require. This is a mode I have practised with particular advantages, in the instance of the moulding cutter, and the planing roller, above spoken of. For the construction of borers, see the article of boring. p. 293 to 305.

How to present the same determinate parts of a number of pieces successfully to the action of a tool. First, Where the intended stations are disposed along the length of a piece. In this case, fix the piece on a sliding bed, in such a manner as to be moveable in the direction of its length: let the sliding bed be furnished with a stop, in the form of a pin or bolt, projecting, for example, from the side, to be inserted, or to drop of itself, into holes or notches in the bench, one for each of the positions required. Or, instead of being made in the bench itself, these holes or notches may be made in a piece of wood or metal, moveable in a groove, or otherwise, along the course which the sliding-bed is to take. In this way, similar pieces may, at equi-distant or otherwise correspondent points of their respective lengths, be exposed to the action of a borer, for example, a saw, a file, or any other tool adapted to the hole, incission, or mark, which they may be intended to receive. pp 375, 376.

Advancement, viz. of the piece to the tool, or of the tool to the piece. For the case where the motion by which the work is performed is of the reciprocatiog kind, instructions have, under the head of Sawing by a reciprocating motion, being given by reference to present practice. When the motion is of the rotative kind, though the advancement may be performed by hand, yet regularity may be more effectually insured by the aid of mechanism. For this purpose, one expedient is the connecting, for instance, by cogged wheels, the advancing motion of the piece with the rotative motion of the tool: another expedient is, employing a power so as to gain purchase; in which case, the facility of insuring regularity will be according to the quality of purchase gained. For short distances, this may be done commodiously enough by a lever or screw; but, where the advancement is to have a long range, the rack and pinion is more convenient; the rack, for example, being fixed to the sliding bed, in a direction parallel to that of its motion, and the pinion which moves it turned by a winch. Or, instead of the action of the hand, a weight may be employed; or, for a very short space, a spring. pp. 383, 384.

The several modes of working above spoken of are the fruit of my own invention, matured more or less by my own practice. The description I have given of them is such as, according to the best of my judgment, would be sufficient to enable any man that chose it to put them in practice to advantage. In some of the instances, the contrivance is no more than what any intelligent mechanic, conversant in the particular branch of work which it is calculated to facilitate, may, by help of these instructions, be able to execute for himself, for the purpose at least of that particular branch of work. In others, especially where the invention is such as to comprise a new and entire machine, the assistant of a millwright or engineer by profession, whose business implies an acquaintance with machinery in general, may require to be called in. These several inventions I accordingly claim the exclusive right of exercising, and that in all the variations of which they are susceptible, and in respect of all sorts or materials to which they are applicable, saving such variations in which, and such materials on which, they may have already been practiced without my knowledge. As to the mode of giving motion to any of the above machines, in addition to the modes in common use, one may be the putting the machine, if not too bulky, into a carriage, and driving the power from the rotation of the wheels on which the carriage runs: in this way, besides the advantage of propability, the power of horses, or other beasts of draught, may be applied, at an expense less than that of erecting a horse-mill. In witness thereof, &c. pp. 387, 388. of the Repertory of Arts, Vol. 10, London 1793.

Opium Drunkenness.

The opium smoker in his heaven is a fearful and sad sight, although, perhaps, not so degrading to the eye as the drunkard from spirits, lowered to the level of the brute, and wallowing in his filth. The idiot-smile and deathlike stupor of the opium debauchee has something far more awful to the gaze than the brutality of the latter. Pity, if possible, takes the place of other feelings, to behold the faded cheek and haggard look of the being abandoned to the power of the drug; whilst disgust is uppermost at the sight of the human creature levelled to the beast by intoxication.

One of the streets in the centre of Singapore, East Indies, is wholly devoted to shops for the sale of this poison; and here, in the evening may be seen after the labors of the day is over, crowds of Chinese, who seek these places to satisfy their depraved appetites.

The rooms where they sit and smoke are surrounded by wooden couches, with places for the head to rest upon, and generally a side room is devoted to gambling. The pipe is a reed of about an inch in diameter, and the aperture in the bowl for the admission of opium is not larger than a pin's head. The drug is prepared with some kind of incense, and a very small portion is sufficient to charge it, one or two whiffs being the utmost that can be inhaled from a single pipe; and the smoke is taken into the lungs, as from the hooka in India. On a beginner, one or two pipes will have an effect, but an old stager will continue smoking for hours. At the head of each couch is placed a small lamp, as fire must be applied to the drug during the process of inhaling; and from the difficulty of filling and properly lighting the pipes, there is generally a person who waits upon the smoker to perform the office. A few days, says Lord Joselyn, of this fearful luxury, when taken to excess, will impart a pallid and haggard look to the features, and a few months, or even weeks, will change the strong and healthy man into little better than an idiot skeleton. The pain they suffer when deprived of the drug, after long habit, no language can explain; and it is only to a certain degree under its influence that their faculties are alive. In the hours devoted to their ruin, these infatuated people may be seen, at nine o'clock in the evening, in all the different stages. Some entering, half distracted, to feed the craving appetite they have been obliged to subdue during the day; others laughing and talking under the influence of the pipe; while the couches around are filled with their different occupants, who lie languid, with an idiot-smile upon their countenance, too completely under the influence of the drug, to regard passing events, and fast merging into the wished for consummation. The last scene in this tragic play is generally a room in the rear of the building, a species of *morgue*, or dead-house, where lie those who have passed into the state of bliss an opium-smoker madly seeks—an emblem of the long sleep to which he is blindly hurrying."

Names in Nautical Architecture.

The principal Plans in Ship-building are: 1. The *sheer-draught, sheer-plan* or *elevation*, which is a vertical and longitudinal view of the ship representing her outboard works from the wales upwards and also keel, stem, and stern-post, with a sectional view of the frames laid off at their proper distances upon the keel and marked from the dead flat in numerical figures towards the stern-post and in letter of the alphabet towards the stem. 2. The *half breadth plans*, or *floor plans*, which are sections upon a longitudinal plane, whereon are represented the water-lines and the ribband-lines. 3. The *body plan*, which is a representation of vertical transverse sections before, at, and abaft the dead-flat. Of the Models used in ship-building we may notice the following: A *bulkshead-model*, is one formed by vertical pieces of board representing half frames which are fastened to a board corresponding with the centre line of the vessel; A *key-model*, or *water-line model*, is formed of pieces of board laid on each other horizontally: these boards being all shaped from the lines on the paper, when put together and fairly adjusted present the true form of the ship. The Lines employed in ship-building are as follows: The *bearding-line*, *buttock-lines*, and *bow-lines*, longitudinal curves at the buttock and bow representing the ship's body cut in vertical sections. The *cutting-down line*, a curve in the sheer-draught corresponding to the upper surface of the throats of the floor amidships, and to the under side of the keelson. *Diagonal lines* or *ribband-lines*, cutting the body-plan diagonally from the timbers to the middle line; they regulate the position of the ribbands and when laid down on the floor-plan give points (called surmarks) at their intersection of the frames for the bevellings of the timbers. The *level-line*, a horizontal line struck between the surmarks of a floor timber upon which line a large square is placed with a plummet in order to set the floor-timber when laid upon the keel to proper level. The *middle-line*, or *centre-line*, a line run from the stem to the stern-post, dividing the ship into two equal parts; *rising-line*, an elliptical line drawn on the plan of Elevation to determine the sweep of the floor-heads throughout the ship's length and thus ascertain the shape of the bottom as to its being full or sharp. The *top-timber line*, or *top-breadth line*, a curve describing the height of the top-timbers, which gives the sheer of the vessel.

The ships built in this city, are copied after faultless models—and every outline is preserved, The model is cut and carved until it suits the tast of the naval architect.

The Great Wall of China.

The famous wall which divides China from Tartary, is a wonder of the world. The Chinese say it is more than 3000 miles in length; but it does not exceed fifteen hundred. Its course is not always even sometimes descending into deep valleys, at others rising to the top of lofty mountains. Its height constantly varies; being much greater in certain situations, especially in the valleys, whilst in some places it does not rise higher than fifteen feet. In some parts this wall is built entirely of stone and brick mixed; and such is its breadth that carriages can drive along the top at ease. The interior of the wall is filled up with earth and it was built of that breadth not only for convenience in time of war, but also to facilitate the transport of materials when it was building, as it otherwise would have been impossible to carry it over steep and precipitous spots. It would in fact, have been beneath their advanced civilization to pass rocks, ravines and mountains, without providing a passage for horse and foot soldiers.—Although it was built more than eighteen hundred years ago it is still so perfect that it does not appear to have been finished above a century. It is decayed only in a few places, and these dilapidations the Tartars, who are now in possession of China, do not trouble themselves to repair They only preserve and defend the gates through which there is much traffic. Under the native Chinese Government, one million of soldiers were employed to guard and garrison this marvellous work.

The Business of Rochester.

There are now at Rochester twenty flouring mills, with over one hundred runs of stones. Forty daily, weekly and semi-weekly mails arrive and depart. Forty churches and religious societies. The quarterly receipts of the post office are $5000; the third largest in the State. Four daily and eight weekly newspapers. There were manufactured there in 1847 over 700,000 barrels of flour. And the present population is believed to be between 35 and 40,000.

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(To be continued.)

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bic feet of air contained in the building you wish to warm with hot water, and you may easily know the size of the boiler required for your purpose. Every cubic foot of water evaporated in a boiler at a pressure of 15 lbs. to the square inch will heat 2000 feet of enclosed air to an average temperature of 75 degrees, and each square foot of surface of steam pipe will warm 200 cubic feet.

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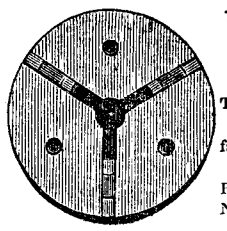

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For the Scientific American.

New Chemical Law.

No. 9.

According to the conditions of this law, all of the compounds of an aggregated series, should also possess similar chemical properties The following examples serve to show the close similarity of the compounds of the aggregated series just given, and also the gradual increase and decrease of properties as the series increase. We will commence by introducing their oxacids.

Nitric Acid, 2R+5O+HO. specific gravity 1.521, boiling point 187°. liquid.

Chloric Acid, 5R+5O+HO. oily liquid.

Bromic Acid, 11R+5O+HO. ropy liquid.

Iodic Acid, 18R+5O+HO pasty mass.

The above compounds of the aggregated series unite with precisely 5 atoms of oxygen each according to the conditions of the law. Their specific gravities have not been calculated, neither have their boiling points, simply for the reason that when the attempt is made decomposition takes place. They all possess similar chemical properties, and even some of them, by their small amount, cannot be distinguished apart. The gradual increase of density may also be seen ; thus nitric acid is a limpid fluid ; as the series increase the oily liquid is formed, this as the series further increase assumes the syrupy condition, and finally end in producing a pasty mass, which partakes partly of the nature of a fluid and partly of a solid ; thus showing a gradual increase of density, which must not be overlooked, as it is highly characteristic of the general conditions of the law which we have been explaining, namely, that all properties of an aggregated series or its compounds will as the series increase, either increase or decrease in a regular manner.

The nitrates, chlorates, bromates and iodates of Potash, must also according to the conditions of the law possess similar chemical properties. Upon examination this is found to be correct. In fact the tastes of the nitrate and chlorate of potash are completely similar. No bromate of potash is laid down in any of the works to which I have access, and have therefore no knowledge of its properties. But the nitrates, chlorates and iodates are almost completely similar in their properties When heated they all give off oxygen gas, deflagrate when thrown upon burning coals, and when boiled with the solution of indigo decolorize it. The gradual increase or decrease of properties which they should possess, may be strikingly shown to exist by the fact, that nitrate of potash is tolerably soluble in water. As we increase with the series, however, the solubility of the substances in water gradually decreases until we arrive at the iodate, which we find to be slightly soluble in water. The bromate of potassa should therefore in point of solubility, be intermediate to the chlorate and iodate. The decrease of solubility may be owing to the 11th condition of the law, namely, all those substances situated the highest in the list generally have the least affinity for any particular substance. Consequently the compound of iodine being the highest in the list, should possess the least affinity for the water, which is exactly the case. The following example gives a list of their hydrogen acids.

	Sp. Gr. Vapor.	
Hydrochloric Acid, Cl+H.	1.269	gas.
Hydrobromic Acid, Br+H.	2 731	gas.
Hydroiodic Acid, I+H.	4.385	gas.

Nitrogen does not appear to unite with hydrogen in the exact proportion to form an acid, at least no such acid exists uncombined, as nitrogen when it unites with hydrogen always unites in the proportion of one atom to three forming ammonia. We shall therefore have to look to the three remaining acids for the similarity of chemical and other properties. The similarity is complete, they all emit dense white fumes upon exposure to a moist atmosphere ; their odor is also similar. The compounds do not go high enough in the series to produce either a liquid or a solid, but the density of hydriodic acid is greater than either of the others. By compressing the above gaseous acids, the hydriodic will probably require less pressure to convert it into a solid than either the hydrobromic or the hydrochloric acids. When they are compressed, however, the hydrochloric proves to be a liquid, while the hydrobromic and the hydriodic acids are produced as ice like solids, thus showing the increase of density as the series increase. The union of the above gaseous acids with water produces liquid acids whose specific gravities increase with the series ; thus the specific gravity of the liquid hydrochloric acid is 1.211, whilst that of the hydriodic acid is 1.709. The liquid hydrobromic acid therefore probably possesses a specific gravity between the two. S. N.

Bridgeport, Conn.

Leydoyen's Disinfecting Fluid.

This fluid is the invention of M. Leydoyen, a French chemist. Its efficiency has been tested by a parliamentary commission appointed for the purpose. They tried its effects on substances in a state of decomposition ; on substances about to undergo decomposition ; on night-soil ; on the impure air of hospitals, and of ill-ventilated places. In some of the experiments the fluid was poured over the substances ; in others it was mixed up intimately with them ; in others a cloth or towel, soaked in the liquid, was waved to and fro in the room containing the vitiated air. It was ascertained that the fluid is a solution of a metallic nitrate, and that its action depends on the decomposition of sulphuretted hydrogen, which is the most offensive of all products of animal decomposition. The commissioners reported generally that for removing the miasmata of sick rooms, the offensive odor of drainage, &c., the fluid was likely to be very valuable ; and that so far as sewerage refuse is used as agricultural manure, it is improved rather than deteriorated by admixture with the fluid, in consequence of sulphuretted hydrogen being removed, and nitrate of ammonia formed. The fluid has been clearly shown to be anti-bromic, that is capable of removing smell, but it is not yet known whether it is really disinfecting, that is, capable of removing infection.

Yellow Metal for Sheathing.

This article is coming extensively into use to supply the place of copper for sheathing vessels. It has almost entirely superceded it in England. It is an alloy of copper and zinc, and is used for sheathing and for bolts and nails for vessels, for air pump rods, for steam engines, &c. Its value, compared with copper is about 15 per cent less, copper being 23 cents, and yellow metal 19. Its durability, compared with copper is almost 25 per cent greater. It is more malleable, ductile, and is less easily oxydized by the action of sea water. Many vessels have worn it from three to five years, it still remaining in use, while copper will only last from two to three years, making at least a saving of 33 per cent in favor of this article.

Myriads of Animalcules.

In the Arctic seas, where the water is pure transparent ultramarine color, parts of twenty or thirty square miles, 1,500 feet deep, are green and turbid, from the vast numbers of minute animacules. Captain Scoresby calculated it would require 80,000 persons, working unceasingly from the creation of man to the present day, to count the number of insects contained in two miles of green water. What, then, must be the amount of animal life in the Polar regions, where one fourth of the Greenland sea, for 10 degrees of latitude, consists of that water.

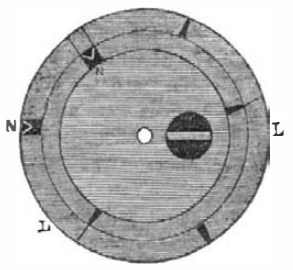
Phosphorescence of the Sea.

Dr. Poeppig, in his voyage to Chili, sailed through about 168 English square miles of this phenomenon ; and if we add that the infusoria causing it may have been equally distributed in the upper stratum of water to the depth of six feet, we must confess that their numbers infinitely surpass the conception of the human understanding.

History of the Rotary Engine.

Prepared expressly for the Scientific American.

Fig. 16.



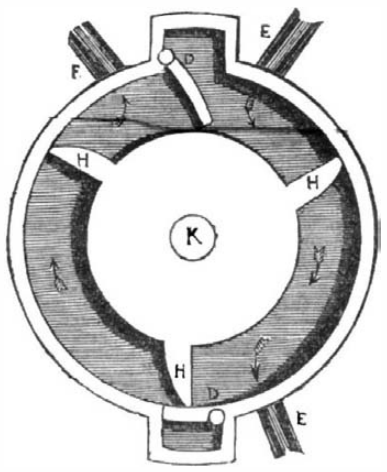
METALIC SPRING PISTON.

To Mr. Cartwright belongs the credit of having invented the first metalic packing which with some modification is now in general use.

Mr. Cartwright's consists of two rings of brass of the full size of the cylinder, which are cut into segments, as shewn at L L L, and laid one over the other, so as to break joint. The joints, therefore, in the under ring are shewn by the dotted lines in the figure, and being thus disposed the two rings are secured in their places by a top and bottom plate, to which the piston rod is fixed. The segments are pushed against the cylinder by steel springs as shewn at N.

In a late work on the high pressure engine by a German Engineer named Ernest Alban, we perceive the metalic packing denounced and the old gasket vindicated and recommended. The objection urged against the metalic packing, is the difficulty of a *true fit* This objection will no doubt make some of our engineers smile, who find no such difficulty, and they will be apt to consider that inferior workmanship—not a correct principle has been the ground of Mr. Alban's attack upon metalic packing.

Fig. 17.



Cartwright's Engine.—No. 2.

This is a rotative engine of Cartwright and described in his specification of the engine in the last Scientific American.

The axis D, is fixed in an internal drum or cylinder, to the periphery of which are attached the three pistons H H H, which entirely fill the channel formed between the interior and exterior cylinders ; D D, are two valves, or flaps, which when shut into the cavities, form a portion of the exterior cylinder, but when open (as drawn) serve as a butment to receive the action of the steam which, being introduced between a valve and a piston, and stopped from escaping past them, acts upon any of the pistons H, which recede from the pressure, and cause the drum and axis D to revolve. The flaps D relieve each other, so that one of the pistons is passing one at the time the other is open, and receiving the force of the steam. Mr. Cartwright does not describe how these pistons and valves are made, and being made, how they are to be kept tight. Two methods only are known, namely, hempen or metallic packing : the first would be soon destroyed by the holes in the sides of the exterior cylinders, formed for a communication with the boiler and condenser, by means of the pipes E E F, and metallic packing would here require too much nicety and expense to be generally useful.—But this is not all. The friction of the interior drum would far exceed that of the common engine, which it was intended to supersede, and the flaps D D, would be extremely liable to knock themselves to pieces by the frequent striking against the drum, as they are thrown forward by the external machinery.

Golden Yellow.

M Guimet gives the following receipt for making a yellow color, of a golden tint, much more intense than the well known Naples yellow. Take of antinomiate of potass (carefully washed) one part, and of minium two parts, grind and mix them well into a paste ; then dry the paste and reduce it to a powder ; and lastly, expose the powder for four or five hours to a red heat, taking care not to raise the temperature so high as to disengage the oxygen from the lead and antimony.

Air Guns.

It is a curious fact, that although the air-pump is a modern invention, yet the air gun, which is so nearly allied to it in the construction of its valve and condensing syringe, should have existed long antecedent to it ; for it is recorded that an air gun was made for Henry IV. by Marin of Liseau, in Normandy, as early as 1408, and another was preserved in the armory at Scmetau, bearing the date of 1474. The air gun of the present day is, however, very different from that which was formerly made, and which discharged but one bullet after a long and tedious process of condensation, while it now discharges five or six without any visible variation of force, and will act upon a dozen, though with less effect.

Changes in Solid Forms.

The gradual change of form of a body which still continues solid, is a problem at which many are confounded, because they cannot imitate the great experiments of nature. On a grand scale, it does not hold ; but, in a smaller way, the barley sugar, which, in course of time, becomes crystaline and dull, presents an example of change of structure without any alteration of its solidity ; and copper coins, buried in the earth, become oxidized without losing their impressions.

Mr. John Wilson Ingleheart, of South River Md., has sent to the editor of the Annapolis Republican, a pear that he pulled from a tree on his farm that had blossomed the second time this season and bore three pears.

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